



OFFICE OF THE PROVOST

MAY 17 2005

NON-GENERAL EDUCATION ~ CURRICULUM PROPOSAL
LIBRARY RESOURCE FORM REQUIRED

SCC #03-04- 429

Deadlines

October 3, 2003 to be implemented Fall 2004 ~ February 13, 2004 to be implemented Spring 2005

PROPOSAL TITLE: New Non Gen-Ed Course: TCP/IP and Internet Protocols and Technologies

Sponsor(s): Computer Science Dept. E-Mail: _____ Ext: _____
Vasil HNATYSKIN E-Mail: HNATYSKIN@Rowan.edu Ext: 4758

DEPARTMENT: Computer Science

COLLEGE: Liberal Arts and Science

If Liberal Arts & Sciences CHECK: History/Humanities Math/Sciences Social/Behavioral Sciences
 UNDERGRADUATE GRADUATE

THE ATTACHED NON-GEN-ED PROPOSAL IS BEST DESCRIBED BY THE ITEM(S) CHECKED

- New non-gen-ed course
- Short-term non-gen-ed course
- Minor curricular changes (fewer than three) to:
 - Existing non-gen-ed course
 - Non-gen-ed degree requirements
 - Major
 - Minor, specialization, concentration, track, certificate program

THE FOLLOWING SIGNATURES REPRESENT APPROVAL

Department Chair: [Signature] Date: 2/11/04

Department Curriculum Chair: [Signature] Date: 11 Feb 2004

Academic Dean: [Signature] Date: 2-12-04

COLLEGE CURRICULUM COMMITTEE

OPEN HEARING Date: 4/12/04 Approved Not Approved

COLLEGE CURRICULUM CHAIR: [Signature]

Senate Curriculum Chair Signature: [Signature] Date: Senate Announcement 5-12-2004

Comments: _____

EXECUTIVE VICE PRESIDENT/PROVOST Signature: [Signature] Date: 5/23/05

Approved Not Approved

REGISTRAR

Date: 5/31/05 Course Description Received & Approved ~ Hegis Taxonomy & Course #: 0706416

Registrar Signature: [Signature]

NOTIFICATION FORWARD

- SCC Chair
- Academic Dean
- Department Chair
- Registrar
- IR
- CAP
- VP Student Affairs
- Others [Signature]

DB
6/30/05
6/2/05

Rowan University
CURRICULUM PROPOSAL
LIBRARY RESOURCE FORM

The purpose of this form is to provide a channel of communication between the library and faculty changing and designing new courses/programs. The information will be used to assess the resources available in the library, and to identify resources the library should acquire to support the course/program. The information will also provide rationale for institutional support for library acquisitions. This form should be completed in a coordinated effort between the course sponsor(s) and the academic department liaison librarian. **THIS FORM MUST BE COMPLETED FOR ALL CURRICULUM PROPOSALS.**

- The sponsor(s) complete parts A & B
 If assistance is required to complete parts A & B, please notify the liaison librarian.
- Forward this form to the librarian who will complete parts C, D & E

This form must be completed and attached to the original curriculum proposal before being approved by the Senate Curriculum Committee

A. College Liberal Arts and Sciences Department _____

Proposed by: Vasil HNATYSKIN Date: _____

Course Title: TCP/IP and Internet Protocols and Technologies

Anticipated Date for Course/Program Offering: 2005-2006

B. List specific resources that should be acquired to support this course.

No additional resources are required

C. Describe the resources available in the library to support this course/program, including reference, monographic, electronic databases, audio-visual materials, etc. A summary statement is sufficient.

- ACM transactions on Internet technology
- "TCP/IP and related protocols", Uyles Black, McGraw-Hill, 1998
- "TCP/IP illustrated", R. Stevens, Addison-Wesley, 1994-1995
- "Implementing IP services at network edges" ^{v.1-v.3} D.Grinzburg & M.Kuttar, Addison-Wesley 2002

D. List key periodicals available in the library to support this course/program.

- IEEE internet computing
- IEEE journal on selected areas in communications
- IEEE network

E. Librarian comments and recommendations:

The Campbell Library has the necessary resources to support this course.

Name: LIBRARIAN LIAISON

John Mellon
 John Mellon

Librarian Signature:

John Mellon

Proposal For A New Non-General Education Course: TCP/IP and Internet Protocols and Technologies

1. Details

- a. Course Title:** TCP/IP and Internet Protocols and Technologies
- b. Sponsor:** Vasil Y. Hnatyshin, Computer Science Department, Rowan University.
- c. Credit hours:** 3
- d. Course Level:** Junior/Senior (400). General Education designation is not sought.
- e. Prerequisites:** 0706.410 Data Communications and Networking
- f. Suggested Time and Scale of Implementation:** One section of the course each year or based on demand.

2. Curricular Effect

The proposed course will become available as “restricted elective” for computer science major and minor. A TCP/IP and Internet Protocols and Technologies course will increase the number and variety of those electives making Computer Science curriculum more attractive to prospective and current students. This course will examine constantly evolving design and architecture of the Internet, exposing students to existing and developing network technologies and standards.

- **Offerings:** No class will be dropped as a result of this course.
- **Adequacy of Resources:** The current staff of the Computer Science department and available computing resources are adequate to implement the proposed course.
- **Recommended Library Resources:** Current library resources are adequate.
- **Short-term Evaluation:** This course has not been short-term.

3. Rationale

Today, Internet became undivided part of our lives, we rely on the Internet to do a variety of everyday chores and tasks such as paying bills, shopping, communicating with friends, reading news, etc. TCP/IP protocol suite is the core of the Internet and I believe that students graduating with the degree in computer science must have a good understanding of how TCP/IP works, how it supports existing Internet architecture, and how TCP/IP interacts with other Internet protocols.

The proposed course will strengthen the department’s current offering of advanced restricted electives. Currently, computer science department offers two related

- **Application Layer and current Internet research problems:**
 - Network security, Domain Name System, Network Management (Management Information Bases (MIB) and network management protocols), multicasting, and wireless networks.
- c. **Evaluation of students and grading procedure:** Students will be evaluated by traditional methods such as homework assignments, quizzes, presentations, midterms, and a final.
- d. **Course Evaluation:** The course will be evaluated through students evaluation as well as regular departmental review.

5. Results of Consultation

We solicited letters of consultation from Mathematic, Management Information Systems, and Electrical/Computer Engineering. Received letters are attached.

6. Catalog Description

0706.4xx 3 s.h.

TCP/IP and Internet Protocols and Technologies

Prerequisites: 0706.410 Data Communications and Networking

This is an advanced computer networking course. Students who have received in the Data Communications and Networking course will examine operation of the TCP/IP protocol as well as the architecture of the Internet. This course will cover such topics as: DNS, DHCP, resolution protocols, Internet routing, Internet Protocol, Transport Protocol, and congestion control. The course will also include selected topics on network security and network management. Students will prepare and deliver technical presentations on various topics in the Internet.

Students will demonstrate knowledge of the architecture of the Internet, protocols, address resolution, and quality of Service. This course will also include selected topics in the Internet. Students will prepare and deliver technical presentations on various topics in the Internet.

courses: 0706.410 Data Communications and Networking and 0706.415 Wireless Networks, Protocols and Applications. A TCP/IP and Internet Protocols and Technologies course is related to these course because they all deal with computer networks. However, Data Communications and Networking examines the principles of data communications and important network architectures and protocols; Wireless Networks, Protocols and Applications prepares students to understand wireless networks systems, and the underlying communications technologies that make them possible, whereas *TCP/IP and Internet Protocols and Technologies* is about design, architecture, and the protocols used in the Internet. These courses will be complementary but distinct in their essential parts.

4. Essence of the Course

a. **Objectives in Relation to Student Outcomes:** At the end of the course the successful students will gain understanding of following:

- History of the Internet design: how the idea came to exist, what were the main driving forces behind the project, and how the Internet evolved to the current state.
- Current Internet protocols and underlying computer networking technology: TCP/IP protocol suite, Internet architecture, and other Internet protocols and their interconnection.
- Current Internet research problems and possible way and directions the Internet may evolve in the future.

b. **Topical Outline/Content:**

- **Introduction:**
 - *History of the Internet:* NSFNET, ARPANET, World Wide Web, and The Internet Engineering Task Force.
 - *Overview of the Internet Architecture:* Applications Layer, Transport Layer, Network Layer, Host-to-Network Layer, and interconnection between the layers.
- **Internet for Medium Access Protocols:**
 - *Host-to-Network Layer:* concept of the medium access protocols, address resolution, Internet addresses, translation between Internet and Physical addresses.
- **Internet Protocol (IP) and Quality of Service:**
 - IP and IPv6, routing and switching protocols and algorithms, Quality of Service, active queue management, network resource management, load sharing, load balancing, and internetworking.
- **Transport Protocols (TCP) and congestion control:**
 - Internet Transport Protocols: Transmission Control Protocol with its variations and User Data Protocol (UDP), and mechanisms for providing congestion control.